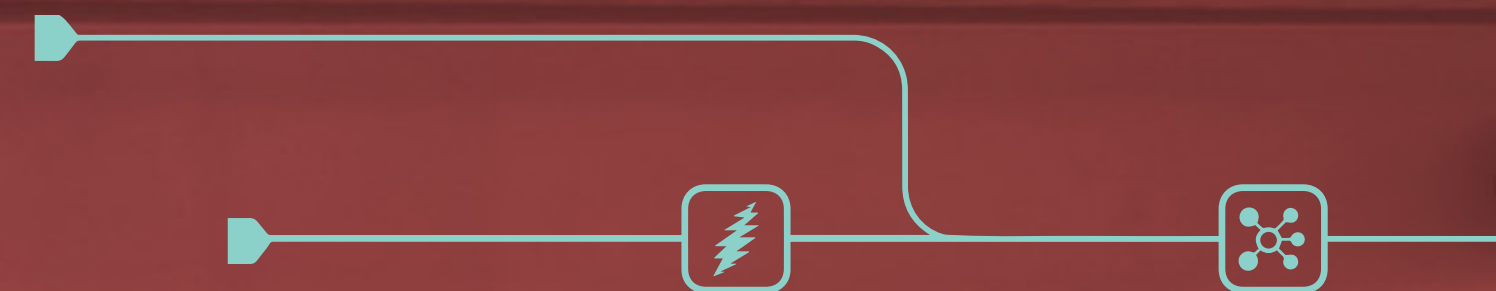# GOVERNMENT HEALTHCARE: ANALYTICS ALCHEMY

Transform healthcare payer, provider, and patient outcomes

CONTENTS

SECTION 1

GOVERNMENT HEALTHCARE IN TRANSITION

HEALTHCARE INCENTIVES
ARE SHIFTING

In 2015, the United States passed legislation linking healthcare quality performance to provider reimbursement. Additionally, recent reform measures within large Government Health Systems like Veteran Affairs (VA) have implemented more quality-based measures and futher blended the public and private health ecosystem. This new dynamic continues to cause growing pains in a field that has traditionally been incentivized by a coarser set of financial-based goals, which haven't always coincided with patients' best interests.

MANY HEALTHCARE TEAMS *LACK THE SKILLS* TO PERFORM THESE ANALYTICS.

The legislation, known as the 2015 Medicare Access and CHIP Reauthorization Act, or MACRA, requires healthcare payers (like, Medicare and Medicaid) and providers to work within value- based reimbursement (VBR) payment models. The pressure to meet these value- based incentives is extremely high, partly because many see the next evolution of healthcare as being focused on improving outcomes across entire populations, and partly because the penalties for failing to meet value-based standards are steep.

In traditional "fee-for-service" models, payment depends on how many procedures, treatments, or services are provided—not whether best practices to ensure an optimal outcome for the patients are followed. With this model, physicians are discouraged from performing procedures if they aren't paid anything extra for those procedures—thus prioritizing profits over quality of care.

The comprehensive change in the way providers and payers will be motivated and rewarded—from fee-for-service to fee-for-value—focuses more on overall population health and evidentiary data than on systems. In this continued evolution, healthcare teams are rewarded for working together to achieve the best possible outcomes.

A successful transition to fee-for-value relies on accurate data to forecast likely outcomes and make recommendations. For best results, analytics based on large

LEGACY APPROACH	MODERN APPROACH
Descriptive Analytics	Descriptive Analytics Predictive Analytics Prescriptive Analytics

data sets will be most relevant, both for payers and providers. However, many healthcare teams lack the skills to perform these analytics.

But you already knew all this. The question is, how do healthcare payers and providers successfully transition from fee-for-service to fee-for-value? For both payers and providers, expanding beyond the limitations of legacy analytics means adding advanced capabilities like predictive and prescriptive to their toolbox.

WHAT GOVERNMENT PAYERS WANT

In this shifting landscape, large payers like Medicare and Medicaid need to meet contractual obligations while reducing costs. They want to protect their financial health while structuring and reorganizing plans and coverage as needed to meet customer expectations and service demands. Payers also feel the pressure to achieve related, supporting goals:

- Optimize the network of providers within a plan
- Implement near real-time evaluations of physicians
- Achieve claims authorizations as quickly as a credit card transaction
- Improve detection of fraudulent claims

To accomplish these goals, payers must broaden data analysis beyond actuarial procedures that look mostly at historical claims data. These approaches are not only too slow to meet the analytical demands of modern healthcare, but they also see only part of the picture, since they are unable to draw deeper insights from data, such as those gained from predictive and prescriptive models.

When payers access the power of advanced analytics, they can meet their business goals while also enjoying "side benefits," like the ability to license out their data to help identify patients for inclusion in clinical trials.

WHAT PROVIDERS WANT

Both Public and Private providers want to reduce operational expenses while providing better outcomes for patients. A key motivator for providers are regulatory fines, especially for indicators like hospital readmissions and adverse events in healthcare facilities. Analyzing relevant data helps providers stay in compliance as they gain insight into how to better prevent readmissions and adverse events.

As incentives shift toward providing better outcomes versus simply more procedures, data analytics, including advanced analytics such as predictive and prescriptive analytics, will help providers:

- Identify high-risk behavior and guide patients along healthier paths

- Recommend specific, precision treatments and medications based on evidentiary data

- Accelerate research success and implementation of new treatments

- Integrate mental healthcare and proper referrals into the traditional clinical setting (mental health issues are a big driver of readmissions for some providers)

- Manage equipment and consumables inventory with greater accuracy

- Improve employee satisfaction and reduce turnover, especially for doctors and nurses

THERE'S GOLD IN HEALTHCARE DATA

Whether you are a healthcare provider or payer, you know that all good analysis starts with the right data. Once data has been cleansed, blended, and reviewed, the resulting analytics give you the reliable intelligence you need to propel change. And propelling change is one of the reasons you got into the job in the first place.

But where do you start? What type of solution will be helpful not just for immediate needs, but in the long-term, without requiring a ton of time and money for custom coding? Use this e-book as a guide to help you answer these questions as you determine the best strategy for unleashing the power of advanced analytics.

100% of CIOs reported that harnessing big data analytics was "top of mind" for 2019.[1]

[1] https://www.spok.com/infographic-cio-priorities-2019

Mining and managing data have become increasingly important across every industry. Nowhere is this truer than in healthcare, where technologies are finally mature enough to help overcome perennial challenges—like using intelligence gained across immense data sets to verify patient IDs and improve patient recommendations.

The next stage in healthcare is all about increased accountability, and increased accountability is driven by actionable data.

> " The volume of big data is projected to grow faster in healthcare than it will in other sectors over the next seven years. "
>
> —**SEAGATE AND IDC REPORT,**
> "The Digitization of the World – From Edge to Core"[2]

[2] https://www.businesswire.com/news/home/20181126005585/en/Seagate-Launches-New-Data-Readiness-Index-Revealing-Impact

TRANSFORM HEALTHCARE DATA INTO VALUE

DATA INSIGHTS ARE COMPETITIVE CURRENCY

In government and private healthcare systems, consumers expect both payers and providers to use analytics to improve service delivery, control costs, and enhance outcomes. They expect the digital transformations taking hold in all aspects of their lives will also transform their healthcare experience.

With private healthcare payers and providers racing to harness the benefits of data analytics, it is vital that government related healthcare payers and providers also evaluate the strength of their analytics culture. Are you currently able to leverage the following?

- ☑ Big Data or third-party data

- ☑ Advanced data prep and blending

- ☑ Predictive and prescriptive analytics models

- ☑ Spatial analytics

If your answer is "no" to any of these capabilities, read on.

VANQUISH SPREADSHEET FATIGUE WITH ADVANCED PREP AND BLEND

Most data analysts would agree that a disproportionate amount of their day is spent on manual copy/paste tasks, pivoting between spreadsheets, custom databases, and other sources—just to get their data stored in one place and in a standardized format. Sound familiar?

There are now solutions that let you compress data prep time down to minutes, because they automate data extraction and make it easy to standardize information from multiple sources. This type of advanced automation is also excellent at matching patient identities, including non-identical, or "fuzzy," matches.

Advanced data prep and blend gives you a unified view of patients based on multiple inputs, including clinical, insurance, demographic, and others. It is the foundation to performing advanced analysis of the data.

RX FOR FUTURE HEALTH: PREDICTIVE AND PRESCRIPTIVE ANALYTICS

A good portion of healthcare analytics still focuses on interpreting past events, also known as descriptive analytics. To stop there is to stop short.

Increasingly, predictive analytics, which presents multiple potential scenarios that are output from the data you prep and join, is a must-have for healthcare teams (and the payers working with them). Predictive analytics gives you the power to capture costs and opportunities that might otherwise have been missed.

Finally, prescriptive analytics goes a step further by indicating not just what is likely to happen, but options for what actions to take based on each potential outcome.

If descriptive analytics are table stakes for healthcare organizations and facilities, predictive and prescriptive analytics are the all-in on the winning hand of advanced analytics. Not only does advanced analytics help reduce readmissions, drive better patient outcomes, and minimize cost, it also drives the transition from fee-for-service to fee-for-value by enabling you to recommend more effective treatments or reconcile information from multiple EHR systems within the same organization. Predictive and prescriptive analytics let you view multiple data perspectives and form rich narratives about the potential results of your decisions.

DESCRIPTIVE ANALYTICS	PREDICTIVE ANALYTICS	PRESCRIPTIVE ANALYTICS
What happened?	What would happen?	What should happen?

However, in many healthcare organizations, these types of advanced analytics are only performed by data scientists. While data analysts and informatics workers may be interested in "upskilling" themselves to do advanced analytics, the inability to code is a huge barrier to entry.

Big data and analytics figure prominently in the fee-for-value transition, and the insights resulting from predictive and prescriptive analytics can be useful by both providers and payers to maximize savings and identify potential opportunities. Organizations that rely solely on data scientists for predictive and prescriptive analytics, however, face increasing bottlenecks and longer wait times than those that can put analytics tools into the hands of more individuals.

> " More than 90 percent of respondents agree that healthcare organizations will not be able to navigate the financial and clinical challenges of the future without investing in predictive analytics tools. "
>
> —**SOCIETY OF ACTUARIES**[3]

[3] https://www.soa.org/Files/programs/predictive-analytics/2017-health-care-trend.pdf

THERE'S A POINT TO
LOCATION INTELLIGENCE

Healthcare organizations that use location intelligence have an extra edge. For example, understanding where your patients live and how they get to you can be reviewed to optimize decisions about placing marketing materials and outreach messaging. This data can also uncover information you weren't initially seeking—such as a segment of the same community choosing a competitor, despite your facility being closer.

You can also use geospatial data to help you identify underperforming sites and assess potential locations for new facilities. On the clinical side, by gaining an understanding of the lifestyles, habits, and health trends of local populations, you can more accurately measure the spread of infectious diseases or identify clusters of cancer and other illnesses that may be associated with specific residential areas, environmental factors, or working conditions.

Geospatial data helps you optimize the quality and range of healthcare offerings based on the needs of local populations, especially when you enrich datasets with relevant demographic and firmographic information.

However, mapping geospatial data into traditional sets can be painful. An advanced, platform-based, analytics solution removes this pain by geocoding large volumes of data quickly, enabling analysts to then enrich that data with additional metrics so they can make informed choices, from facilities planning to marketing.

WORK WITH YOUR DATA
WHERE IT LIVES

Traditional analytics tools force you to extract the data you're working with, limiting scalability. For example, if you're working with large data sets, extraction means you can only work with a representative sample of that data. Not so with in-database processing and analytics.

As the name suggests, in-database processing and analytics allows you to work with data in place, without extracting it. Not only does this save time, but it also enhances security, because no sensitive data, including patient data, is pulled out of its original system. Instead, it's reviewed and manipulated where it already resides.

In-database tools enable analysts to work with large datasets without requiring IT or technical staff to help. Analyze at petabyte-scale and take advantage of the most current in-database innovations available.

Q+A FOR HEALTHCARE ANALYTICS PROS

Q: IS IT POSSIBLE TO REDUCE THE AMOUNT OF TIME NECESSARY TO BLEND DATA FROM WEEKS TO HOURS—OR EVEN MINUTES?

A: Absolutely. Advanced automation technology makes it possible to extract the data you need from any source and adjust for consistency, including fuzzy matching. Depending on complexity, data can indeed be blended in minutes instead of days or weeks.

Q: WHY IS IT IMPORTANT TO SEEK INTUITIVE, DRAG-AND-DROP, ANALYTICS SOLUTIONS, VERSUS A CODING-ONLY APPROACH?

A: When tools are intuitive, more people use them, eliminating bottlenecks from overburdened data scientists with an unending need for their specialized knowledge. When more people can perform advanced analytics, your healthcare organization can leverage up-to-date data that's been reviewed from a variety of perspectives to move with agility and sure-footedness.

Q: WHY IS LOCATION INTELLIGENCE SO IMPORTANT FOR HEALTHCARE ANALYTICS?

A: Geospatial intelligence helps you analyze patients or optimize resources by leveraging demographic and spatial analysis. In leading solutions, it doesn't just mean blending this data, but also enriching it with in-house and third-party data, such as demographics and firmographics. This gives you a more fully realized picture of not just your patient, but their community—essential for improving population health.

Q: SHOULD AN ANALYTICS SOLUTION CONNECT TO MY ORGANIZATION'S ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM?

A: Definitely. Leading solutions are flexible enough to connect and work with just about any ERP. This can be a mission-critical issue if you use more than one ERP, as is sometimes the case with distributed, multi-site, organizations that have grown in complexity over time.

Q: WHAT IS A MODERN APPROACH TO INTEGRATING ADVANCED ANALYTICS INTO MY HEALTHCARE ORGANIZATION?

A: Healthcare and other data-intensive organizations will benefit most from an end-to-end analytics platform solution. This type of platform technology provides the key capabilities to deliver accurate and consistent analytics through connections to CRM systems, eliminating duplicate patient information, and solving complex business issues like patient readmissions, and more, all in a single platform.

Q: WHY AREN'T SEPARATE POINT SOLUTIONS ENOUGH FOR THE DIRECTION HEALTHCARE ANALYTICS IS HEADED?

A: The overarching challenge with separate point solutions is data integrity. Often, these products are deployed when an organization is solving a specific, sometimes urgent, problem. Over time, point solutions will exhibit varying technological limitations, often related to an inability to speak with other systems. Even when point solutions can communicate with one or more connected systems, connections get more convoluted, which complicates reporting. Data may be replicated or underrepresented. There may be several versions of a patient's data bouncing around between systems. Aside from being hard to weed through, this approach doesn't scale well and stands underprepared for our intensifying reliance on accurate data.

BRIDGE THE TALENT GAP WITH CITIZEN DATA SCIENTISTS

HEALTHCARE DATA SCIENTISTS ARE HARD TO FIND AND KEEP

Advanced analytics can be used to access and standardize information across enormous data sets from diverse sources. The key to winning in a competitive healthcare landscape may come down to an organization's analytics capabilities—providers and payers that want to maintain a competitive edge should invest in highly capable and future-ready analytics solutions.

Even when you have all the data, the tools you use may leave you stuck waiting for a data scientist to unravel the narrative hidden in your information—that is, if they even have the bandwidth to prioritize your request among many others. Occupying a highly specialized and often expensive role, data scientists are in high demand. Even when you find and hire a qualified candidate, they will be a continual target for headhunters.

50% OF DATA SCIENCE PROFESSIONALS STAY AT THEIR JOBS TWO YEARS OR LESS.[4]

[4] https://www.kdnuggets.com/2015/09/how-long-data-scientists-stay-jobs.html

LOOK FOR ANALYTICS POTENTIAL IN EXISTING TALENT

The most efficient path forward is to empower data analysts and line-of-business personnel alike to become citizen data scientists—individuals without specific training in data science, but who can use code-free software with drag-and-drop data science tools to get to valuable insights. By empowering non-data scientists, you can exponentially increase analytic capabilities—without causing IT bottlenecks.

Q: HOW CAN I QUICKLY IMPLEMENT NEW ANALYTICS TECHNOLOGY WHEN DATA SCIENTISTS ARE HARD TO SOURCE AND EXPENSIVE TO HIRE AND TRAIN?

A: ACTIVATE TALENT ALREADY IN PLACE TO BECOME CITIZEN DATA SCIENTISTS.

Instead of sourcing and training data scientists, upskill employees you already have. This way, qualified employees can become citizen data scientists, with the opportunity to work in advanced analytics without having to seek another formal degree. Your organization may have many individuals who would be interested in this type of opportunity. However, they may believe they need to know how to code and are unaware they can perform advanced analytics with the use of drag-and-drop tools and visual workflows.

There are potential members of the analyst "club" across many departments. Informatics is the starting point, but there are also potential citizen data scientists working in departments from Accounts Receivable to Compliance to Facilities to Nursing, and many others.

In addition to the functional benefit of having more people available to perform data analysis, citizen data scientists bring their subject matter expertise and passion for the industry to analytics projects.

When analytic resources are unlocked for a broader pool of employees, organizations can gain momentum and use the resulting insights to save money and improve patient outcomes from the ground up.

Transforming healthcare may seem like wizardry, but the ingredients are simple: the right tools in the right hands, no wolfsbane or eye of newt required.

DEMOCRATIZE HEALTHCARE ANALYTICS WITH ALTERYX

OVERCOME TWO BIG OBSTACLES TO POWERFUL HEALTHCARE ANALYTICS

The two biggest obstacles precluding you from having advanced healthcare analytics at your fingertips are:

1 PEOPLE | 2 TECHNOLOGY

Here are the tools: advanced capabilities, including geospatial capabilities, in-database processing, and Monte Carlo simulations—all the fun stuff analysts love is at your fingertips in Alteryx.

When it comes to the talent, a code-free and code-friendly environment is essential to democratizing access to advanced analytics. Leading solutions should have an interface that can be mastered by employees at a variety of levels, including line-of-business. With Alteryx, you can level up your skills and become a citizen data scientist in a centralized environment that makes it easy to run simulations and change models on the fly.

> "Alteryx, as a platform, empowers people. We're empowering our actuarial analysts to do things they never could do before."
>
> **—JOHN HEISLER**
> Business Intelligence Engineer, Health Payment Systems

DEMYSTIFY
ADVANCED ANALYTICS

There is simply no better way to make reliable recommendations for improving population health or personalizing treatment choices than to leverage the power of machine learning and automation that are part of the right data analytics solution.

The Alteryx Platform gives healthcare line-of-business users the ability to prepare, blend, and analyze data without writing any code, and without needing to burden–or wait for–IT. For those who want to use their coding skills, Alteryx makes it possible for data scientists to share their code and collaborate with non-coding stakeholders, all in one platform. Data scientists can also easily deploy predictive models into production or embed them into applications.

By joining all relevant data from clinical, insurance, demographic, and more, you gain a unified view of each patient. Even though much of this relevant data may be initially housed in disparate systems or formats, Alteryx makes it easy to blend it consistently and quickly–without having to copy and paste between spreadsheets.

MEET THE ALTERYX PLATFORM

ADVANCED PREP + BLEND

Leave spreadsheet confusion behind and cleanse data up to 100 times faster than traditional workflows. Recognizing and extracting data from multiple sources, including data warehouses, cloud applications, spreadsheets, and other sources, Alteryx automated workflows have been able to reduce analysts' data cleansing time from weeks to minutes.

> " [Alteryx] allows me to do things that people look at and say, 'How did you do that? You must be a genius' "
>
> **—JON NAKAMOTO**
> Regional Medical Director, Quest Diagnostics

PREDICTIVE ANALYTICS

Work with more than 40 easy-to-use, drag-and-drop, predictive analytics tools like regression analysis, time series modeling, neural networks, decision trees, and others. Elevate visibility into patient trends, forecast population needs and availability of vaccines, identify individuals with an elevated risk of developing a chronic condition, and more. Apply predictive analytics tools to challenges facing your healthcare organization, including financial, administrative, and data security. Prediction can result in prevention when it comes to health management.

PRESCRIPTIVE ANALYTICS

Discover "what to do next" scenarios with the powerful decision modeling in Alteryx. Use prescriptive analytics to recommend the best course of action for a patient. On the payer side, prescriptive models can use patterns to predict changes to expected claims volume, and what scenarios are likely to result from changes in premium pricing. On the administrative side, hospitals can use prescriptive analytics techniques to improve staffing levels, plan facility location, manage inventory, and schedule home health services.

LOCATION INTELLIGENCE

Use location intelligence to increase access to care by analyzing local healthcare service needs and availability of existing infrastructure matched to population demographics, lifestyle segmentation, and availability of insurance. Identify areas with high hospital readmission rates. Track and analyze the spread of infectious diseases and spot areas where cancer and/or other serious illnesses are clustered.

IN-DATABASE PROCESSING AND ANALYTICS

Work with data in-place, improving both security and efficiency. You don't need to use a sample set of data with Alteryx. Use the entire data set while leveraging the built-in data processing available with Amazon Redshift, Oracle, Microsoft SQL Server, Cloudera Impala, Spark, and Teradata. Use in-place processing for queries, formulas, filters, and joins, using native operations to maximize performance.

> "The physician group we are working with is so excited. The insight from Alteryx is much better than anything they have ever had.
>
> **—CHARITY WILSON**
> Senior Consultant, Saxony Partners
> (Healthcare business consultants)

ALTERYX IS FOR EVERYONE

Extract more value from your data and talent. Transform from a healthcare organization that's surviving to one that's thriving with the improved efficiency and reduced costs that result from well-implemented healthcare analytics.

It no longer makes sense to use an analytics process that requires waiting in the queue of an over-booked data scientist for insights that can lose relevance quickly. That's why, instead of simply hiring additional data scientists, you'll achieve better long-term results by leveraging a tool that can be used by a broader group. When interested individuals use the tools to become citizen data scientists, you can get results from analytics faster. This is the most efficient path up the competency curve for delivering actionable, considered, analytic recommendations.

The Alteryx Platform is the only analytics solution that combines an easy-to-use, drag-and-drop, interface with the power of advanced analytics—including predictive and prescriptive analytics as well as location intelligence and in-database processing. In other words, leading technical capabilities translated into an interface anyone can learn.

You have the formula for turning healthcare data into analytics gold. It's time to make magic!

> " Once you solve your first problem, you'll be hooked. "
>
> **—JON NAKAMOTO**
> Regional Medical Director, Quest Diagnostics

alteryx | The Thrill of Solving

ABOUT ALTERYX

Revolutionizing business through data science and analytics, Alteryx offers an end-to-end analytics platform that empowers data analysts and scientists alike to break data barriers, deliver insights, and experience the thrill of getting to the answer faster. Organizations all over the world rely on Alteryx daily to deliver actionable insights.
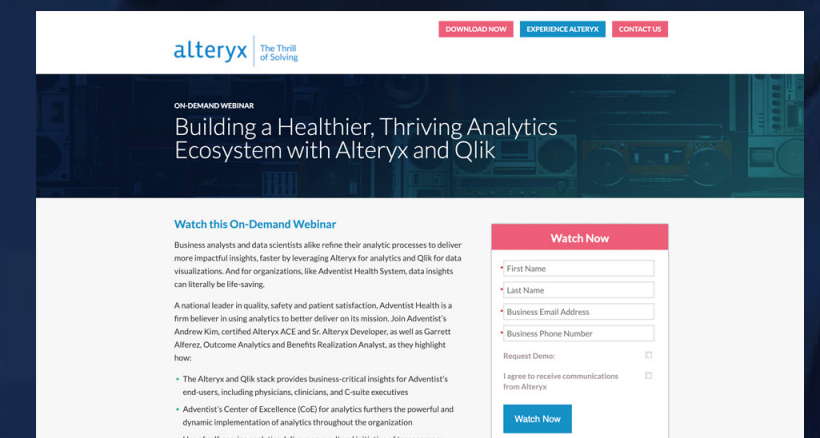
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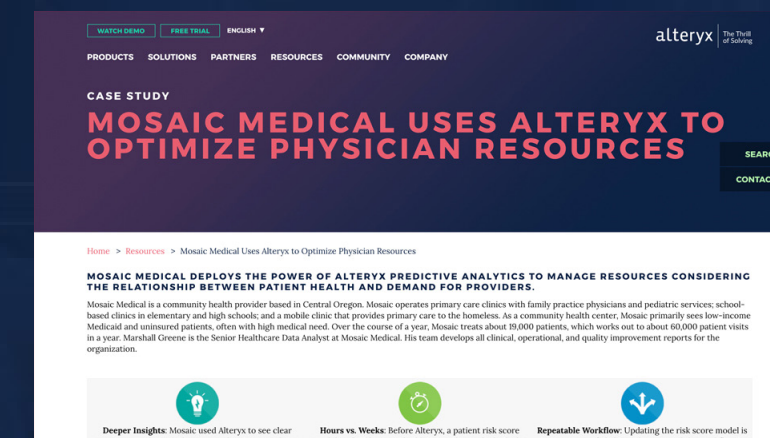
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Optimizing Physician Resources
(case study)

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Building a Healthy Analytics Culture
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